

Patent claims

1. Particulate composite material, **characterized in that** it has an average particle size of 20 to 50 μm and contains at most 10 wt.-% particles with a size of $< 10 \mu\text{m}$.
2. Particulate composite material according to claim 1, **characterized in that** it has a maximum particle size of 70 μm .
3. Particulate composite material according to claim 1 or 2, prepared by curing of a mixture of

- (a) 10 to 80 wt.-%, preferably 10 to 30 wt.-% organic binder;
- (b) 0.01 to 5 wt.-%, preferably 0.5 to 2 wt.-% polymerization initiator;
- (c) 20 to 90 wt.-%, preferably 60 to 88 wt.-% inorganic filler,

each relative to the total mass of the uncured mixture.

4. Particulate composite material according to claim 3, **characterized in that** it contains as filler quartz, glass ceramic, glass powder or a mixture of these.
5. Particulate composite material according to claim 4, **characterized in that** it contains glass powder, preferably barium glass powder and/or strontium glass powder.
6. Particulate composite material according to one of claims 4 to 5, **characterized in that** the quartz, glass ceramic and/or glass powder has an average particle size of 0.4 to 1.5 μm , preferably 0.7 to 1.0 μm .

7. Particulate composite material according to one of claims 3 to 6, **characterized in that** it contains 10 to 50 wt.-%, preferably 20 to 30 wt.-% X-ray-opaque filler.
8. Particulate composite material according to claim 7, **characterized in that** it contains ytterbium fluoride.
9. Particulate composite material according to one of claims 3 to 8, **characterized in that** it contains precipitated mixed oxides.
10. Composition, containing at least one polymerizable monomer and/or prepolymer, at least one polymerization initiator and at least one particulate composite material according to one of the previous claims.
11. Composition according to claim 10, **characterized in that** it contains
 - (i) 10 to 80 wt.-% organic binder;
 - (ii) 0.01 to 5 wt.-% polymerization initiator;
 - (iii) 20 to 90 wt.-% particulate composite filler according to one of claims 1 to 9,each relative to the total mass of the composition.
12. Composition according to claim 10 or 11, **characterized in that** it contains inorganic filler as a further component.
13. Composition according to claim 12, **characterized in that** it contains as inorganic filler quartz, glass ceramic, glass powder, or a mixture of these.

14. Composition according to claim 13, characterized in that it contains glass powder, preferably barium glass powder and/or strontium glass powder.
15. Composition according to claim 13 or 14, characterized in that the quartz, glass ceramic and/or glass powder has an average particle size of 0.4 to 2 μm .
16. Composition according to one of claims 12 to 15, characterized in that it contains 25 to 70 wt.-%, preferably 30 to 50 wt.-% quartz, glass ceramic and/or glass powder.
17. Composition according to one of claims 12 to 16, characterized in that it contains X-ray-opaque filler as a further component.
18. Composition according to claim 17, characterized in that it contains ytterbium fluoride.
19. Composition according to one of claims 17 to 18, characterized in that it contains 1 to 10 wt.-% X-ray-opaque filler.
20. Composition according to one of claims 12 to 19, characterized in that it contains a layered silicate as a further component.
21. Composition according to claim 20, characterized in that it contains 0.05 to 5 wt.-% layered silicate.
22. Composition according to one of claims 10 to 21, characterized in that it additionally contains precipitated mixed oxide.

23. Composition according to claim 22, **characterized in that** it contains $\text{SiO}_2/\text{ZrO}_2$ mixed oxide.
24. Composition according to one of claims 22 to 23, **characterized in that** the mixed oxide has a particle size of 200 to 300 nm.
25. Composition according to one of claims 22 to 24, **characterized in that** it contains 20 to 70 wt.-% mixed oxide.
26. Composition according to one of claims 10 to 25, **characterized in that** it additionally contains 0.01 to 2 wt.-% additives.
27. Use of a composition according to claims 10 to 26 as dental material, in particular as tooth-filling material, material for inlays or onlays, tooth cement, facing material for crowns and bridges, material for false teeth.